Legacy - Zonal OCR

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How to Build Zonal OCR

1. **Clone the repository** from the ZonalOCR project in DevOps.
   a. Right after the clone finishes, you may need to get the appropriate .NET Framework version. Simply download the version it asks for - you do not need to uninstall any other versions you may have.

- *NOTE: You can no longer download the developer pack for .NET Framework 4.0 and 4.5. We have a workaround for this though. Use this link and follow the instructions in the comment on the drawer. For .NET Framework 3.5 click here for the installer and run the exe.*

2. **Set up Accusoft**
   a. Before doing anything with Accusoft, go to your Program Files (x86) folder on your C drive and create a new folder called Accusoft.
   b. Now, open the "3rd Party" folder in the source code.
   c. Run the "FormSuite5DotNet.exe" file.
   d. Follow the install wizard, keeping all the defaults EXCEPT the Destination Folder. When you get to a screen that looks like the one below, change the destination to be the Accusoft folder you created in Program Files (x86).
   FormSuiteDefaultDirectory.png
   Image: Default Destination Folder
   Note: The destination shown above is the default one and it's NOT the one you want. Be sure to change it to "C:\Program Files (x86)\Accusoft".
   e. Finish the install wizard and wait for the install to complete - it may take a while.
3. **Set up Infragistics**
   a. Open "3rd Party\Infragistics" in the source code.
   b. In that directory, you'll find the "Infragistics 2015 keys.txt" file that contains the Infragistics keys we have. You'll need Key 1 for this installation.
   c. Open the "Setups" folder and run the msi you find in there.
   d. Go through the wizard and keep all the defaults. When it asks for your product key, enter Key 1 from part b above. On that page it also asks for a name and organization. The name can be whatever the box defaults to and the organization can be left blank.
   e. You can select Typical when the option comes up and it should complete installing.
4. **Install Certificate**
   a. Open "ZonalOCR\ZonalOCR" in the source code.
   b. In that directory, you'll find the "efcKey.pfx" file.
   c. Double-click the key file to begin the installation wizard. Accept all the defaults.
   d. You will be prompted for a password. The password can be found in LastPass in the "Shared-Development" folder in the ".pfx certificate" secure note.
5. Rebuild the project in Visual Studio using debug mode
6. Your project should build and not have any issues!

Troubleshooting Zonal Build Issues

It's totally possible that you'll still have some issues after following the steps above. Here are some of the most common issues found when building Zonal on a new machine:

- *Some C# using statements are throwing errors*
  Possible Solutions:
  a. Open the pertinent csproj file in notepad and manually change the reference "HintPath" property to the appropriate directory. This is a common issue for the Accusoft sdks. Below is a screenshot of the ZonalOCR.csproj file, with the Accusoft reference HintPath opening tags highlighted so you can see where you should look for invalid or incorrect paths. In your troubleshooting, make sure you look at the specific reference that's throwing the error.
  Image not found or type not supported
  ZonalOCR_csproj_notepad.png
  b. If the using statement is for log4net, make sure that the log4net NuGet package is installed for the pertinent project.
- *Some XAML assembly references are throwing errors*
  Possible Solutions:
  a. Switch the solution to Release mode in VS, rebuild, and then switch back to Debug mode.
  b. I know this sounds dumb, but close and reopen VS.
- *Infragistics key is invalid*
  Possible Solutions:
  a. Try Key 2 from the Infragistics 2015 keys.txt file.
- *CDIntfEx reference error*
  a. Run the installer at "3rd Party/drivers/drivers6003/Install.exe"
  b. Restart VS

Still Stuck?

Hopefully the above steps and hints were useful, but it's totally understandable if you're still having trouble. The best reference you can go to is DSR, since they were the ones over this project for a long time. If anyone could help you get Zonal running, they could!

How to Publish Zonal OCR

Preparation

1. You need to create the following directory: C:\Deploy\Zonal
2. Make sure that the ZonalOCR project builds on your machine

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Publish Staging Build

1. Open the ZonalOCR.sln and right click on the ZonalOCR project and select properties, opening the publish tab
2. Make sure that the Publishing Folder is C:\Deploy\Zonal and that that directory exists on your machine (see step 1 of Preparation)
3. Make sure the installation Folder URL is http://downloads.efilecabinet.com/Stg-ZonalOCR/
4. Update the Assembly and File Version of the ZonalOCR project (right click -> Properties -> Application -> Assembly Information)
5. The Install Mode and Settings should be set at "The application is available offline as well (launchable from Start menu)"
6. Increment the version number by adding 1 to whatever the current "Build" number is. Don't worry about the Major, Minor, or Revision numbers.
7. Click Publish Now - here's an image of the settings described above.
image.png
Image not found or type unknown
8. Save All, then restart visual studio. You need to do this every time you update the installation folder url
9. Once the publish succeeds, go to C:\Deploy\Zonal and open the ZonalOCR.application file in a text editor. Verify that the xml tag `<deploymentProvider>` has a `codebase` attribute that matches the Installation Folder URL. If it does not, then the build is no good. See the troubleshooting section at the bottom of this page.
10. Zip all of contents of C:\Deploy\Zonal into a single file.
11. Get the zip file to Dev Management and they will upload the file for QA to download!

Publish Release or Production Build

In the recent past, when releasing, our OPs team has not invalidated cloudfront on the files they put in S3, if there are issues or weirdness right after a release, this is the first things you should check to make sure happened

Obfuscating the Release

Assembly AccusoftFormsApi.dll is obfuscated because it contains Accusoft license keys. ConfuserEx is used to obfuscate it.

1. Update the build number by right clicking the ZonalOCR project and clicking properties and the publish tab. Also update the assembly and file version of the Zonal OCR project (right click -> Properties -> Application -> Assembly Information) It may be necessary to repeat the process for the following projects:
   • AccusoftFormsApi
   • AccusoftOCR
   • BarcodeReader
   • BusinessLogic
   • DataAccess
   • DataTransmission
   • efcOnlineApiClient
   • UtopiaAPIClient
   • Pdf2ZonalOcr
   • RegistryAndPathUtils
   • UpdateDbTool
   • ZonalOcrLogger
   • ZonalOcrPrinterInstall
2. Change the configuration to ReleaseObfuscated
   image.png
   Image not found or type unknown
3. To check that obfuscation works correctly, build the AccusoftFormsApi project
4. Build the solution

Publishing the Release

1. Right click on the ZonalOCR project and select properties and open the publish tab
2. Make sure that the Publishing Folder is C:\Deploy\Zonal and that that directory exists on your machine (see step 1 of Preparation)
3. Make sure the installation Folder URL is http://downloads.efilecabinet.com/ZonalOCR/
4. The Install Mode and Settings should be set at "The application is available offline as well (launchable from Start menu)"
5. The version number should have already been incremented
6. Click Publish Now - here's an image of the settings described above.
   image.png
   Image not found or type unknown
7. Once the publish succeeds, go to C:\Deploy\Zonal and open the ZonalOCR.application file in a text editor. Verify that the xml tag `<deploymentProvider>` has a `codebase` attribute that matches the Installation Folder URL. If it does not, then the build is no good. See the troubleshooting section at the bottom of this page.
8. Zip all of contents of C:\Deploy\Zonal into a single file.
9. Save All, then restart visual studio. You need to do this every time you update the installation folder url
10. Get the zip file to Dev Management and they will upload the file for QA to download!

Create an MSI installer for support

After publishing a new version of ZonalOCR, we need to create an MSI installer for it and provide it to Support.

See How to Create Zonal OCR MSI Installer for directions.

Troubleshooting

ZonalOCR.application file has the wrong `<deploymentProvider>`
After publishing a ZonalOCR build, the ZonalOCR.application file should contain an xml tag called `<deploymentProvider>` with an attribute called `codebase` that matches the Installation Folder URL. If it does not match, the build is no good. DO NOT just edit the value in the file because it needs to be set correctly as part of the publish process.

Try this:

1. Right click the ZonalOCR project in the Solution Explorer and click Unload Project
2. Right click the ZonalOCR project and click Edit Project File
3. Make sure both `<InstallUrl>` and `<UpdateUrl>` contain the Installation Folder URL. Save the file.
4. Right click the ZonalOCR project and click Reload Project.
5. Publish again

How to Create Zonal OCR MSI Installer

Prerequisite:

- MSBuild and signtool should be present on machine
- ZonalOCR project should contain all required dlls and should build without any errors
- You should be running the project in Visual Studio 2019 (not 2022 or later)

Steps:

1. Open ZonalOCRInstaller project
2. Navigate to appsettings.json and fill in next fields with correct values:
3. When you first clone the project, you will need to run the efcKey.pfx file one time. When you have done this once, you will not need to do it again unless you reset your repository. This file located in your ZonalOCR\ZonalOCR directory and is run simply by double-clicking it. Go through, keeping all of the default settings, but when it asks for a password use the one that we store in LastPass. This is the same password that we will use for the **ZonalOcrSignKeystorePassword**.

MsBuildPath - path to MSBuild.exe. It is required for building ZonalOCR project
SignToolPath - path to signtool.exe. It is required for signing ZonalOCR executable and an installer itself.
ZonalOcrSignKeystoreFile - keystore with certificate. It is required for signtool.exe
ZonalOcrSignKeystorePassword - keystore password. It is required for signtool.exe. You can find it in LastPass. Please do not commit the password to git.
ZonalOcrVersionNumber - is displayed in the Programs and Features control panel. Make sure this matches the version number in the ZonalOCR project

For some cases default values of other parameters can be also changed:
TargetDirectory - default installation directory
ProjectName - it is used for msi file name (it will be <ProjectName>.msi)
ProjectPublisher - is displayed in the Programs and Features control panel
ZonalOcrSolutionFolder - path to the ZonalOCR solution
ZonalOcrSolutionFile - ZonalOCR solution file
ZonalOcrCompiledFolder - path where installer will find compiled and obfuscated binares
ZonalOcrExecutable - ZonalOCR executable file

appsettings.json exampe:

```
{
  "TargetDirectory": "%ProgramFiles%\\eFileCabinet\\ZonalOCR",
  "ProjectName": "eFileCabinet Zonal OCR",
  "ProjectPublisher": "eFileCabinet",
  "MsBuildPath" : "C:\\Program Files (x86)\\Microsoft Visual
Studio\\2019\\BuildTools\\MSBuild\\Current\\Bin\\MSBuild.exe",
  "SignToolPath": "C:\\Program Files (x86)\\Windows Kits\\10\\bin\\10.0.17763.0\\x64\\signtool.exe",
  "ZonalOcrSolutionFolder": "..\\..\\ZonalOCR",
  "ZonalOcrSolutionFile": "ZonalOCR.sln",
  "ZonalOcrCompiledFolder": "ZonalOCR\\bin\\ReleaseObfuscated",
  "ZonalOcrExecutable": "ZonalOCR.exe",
  "ZonalOcrSignKeystoreFile": "ZonalOCR\\efcKey.pfx",
  "ZonalOcrSignKeystorePassword": "salive.1",
  "ZonalOcrVersionNumber": "20.2.10.1"
}
```

3. Build installer project. During the build <ProjectName>.msi will be created.

Troubleshooting:

Most problems encountered during the build will be related to MsBuildPath and SignToolPath. Verify that both executables exist at the specified paths. For example, if you have the Community edition of Visual Studio installed your MsBuildPath might need to be: "C:\\Program Files (x86)\\Microsoft Visual Studio\\2019\\Community\\MSBuild\\Current\\Bin\\MSBuild.exe"

Another common issue is if you try to run the project in Visual Studio 2022 or later it will fail without any clear explanation. This project has to be run in Visual Studio 2019. We're not sure why and hope to correct that before long.

A third trip-up is that the build will not work if you have never *run* the efcKey.pfx file (see step 3).

Finally, the build will fail if you have any instances of the ZonalOcr.exe running on your machine as it will lock up resources that the build requires. You can check your system tray to see if you have any instances of the executable running and close them before trying again.

Zonal OCR Initial Install Bug (2021)

There is a bug w/ Zonal OCR when you initially install it for the first. There is a file missing. You need to place this file at C:\Users\Public\Documents\ZonalOCR\ZonalOcrDb.sdf before Zonal OCR will work.

How to add error messages that appear during processing

image.png
Image not found or type unknown

When Zonal OCR is processing files it will display this big red box if an error occurs. If you ever need to add a new type of message that should appear, follow these instructions.

Required Files to Update

FileState.cs
Add an enum value for your new error.

FileStateToHintConverter.cs
Add the text that will be displayed when the error occurs.

FormsOcr.ResourceDictionary.xaml
Find the <Style TargetType="{x:Type userControls:ErrorMessage}"> tag. Add a child <DataTrigger> tag for your new FileState enum

FileStatisticsModel.cs
Add your new enum to the FailedCount getter.

Windows Notification

image.png
Image not found or type unknown

If you want your error to also appear as a Windows notification (which is probably what you want), you also need to make this change.

TrayNotificationHelper.cs
Add your new enum to the errorsState list.

Triggering the Error

All that's left is to trigger the error at the appropriate time. Simply set the FileState property on the FileView model to the value of your new enum.

The red error box will automatically appear because its text value is bound to the FileView. The Windows notification will automatically appear because the FileState setter notifies the TrayNotificationHelper of its new value.

References

See commit {something} in the ZonalOCR git repository for an example.

How to change the database structure

Zonal OCR uses a file-based SQL CE database stored on the user's computer to persist templates, fields, etc. If you need to make a change to the structure of the database (tables, columns, or whatever) follow these instructions.

Update the UpdateDbTool project

UpdateDbTool automatically runs on the user's machine every time they install a new version of Zonal OCR. First, we need to update the tool so that it can detect if the user's database requires an update, and then how to apply that update.

The general approach is to execute a query to check if the user's database needs an update and, if so, execute the commands to change the database.

Example
As a specific example, here's how you would modify UpdateDbManager.cs to add a new ExcludeFirstPage column to the existing Forms table. (This example assumes this will be the 6th time we've updated the Zonal OCR database since its initial release.)

1. Add a string property to the class called AlterFormsAddExcludeFirstPage that contains an ALTER statement that, when executed, adds the column to the table.
2. Add a string property to the class called CheckVersion6Installed that contains a query that, when executed, checks if the ExcludeFirstPage column exists in the Forms table.
3. Create a PrepareUpdateQueriesVersion6 method that adds the AlterFormsAddExcludeFirstPage property to the list of queries to be run.
4. In the PrepareUpdateQueries method, write a conditional that calls the CheckVersionInstalled method, passing the CheckVersion6Installed string as an argument, to determine if the database needs updated.
5. Inside the conditional, call your PrepareUpdateQueriesVersion6 method.

Apply Changes
To test your code and apply the changes to your local installation of Zonal OCR, you can simply set the UpdateDbTool project as your startup project in Visual Studio and run the solution. (You may be prompted to re-open Visual Studio as an administrator.) You do NOT need to create a new installer just to test your changes.

Apply migration to the empty database

When a user first installs Zonal OCR, an empty copy of the database file is placed in their documents folder. Be sure to update this file in the ZonalOCR solution and include it when committing the rest of your changes to source control.

Update these files using UpdateDbTool:

- \DataAccess\ZonalOcrDb.sdf
- \ZonalOCR\ZonalOcrDb.sdf

Update the ZonalOCR project

After the database structure has been updated, you need to update some files in the DataAccess project in order to read/write to it

- DataAccess
  - ZonalOcrDb.edmx.sql - update initial creation queries
  - ZonalOcrDb.edmx
    - <edmx:StorageModels> -> <EntityType>
    - <edmx:ConceptualModels> -> <EntityType>
    - <EntitySetMapping>
  - Update models in /EntityModel/